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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,465	02/12/2002	Masakazu Furukawa	215648US0PCT	4689

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

PAIK, SANG YEOP

ART UNIT PAPER NUMBER

3742

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,465

Applicant(s)

FURUKAWA ET AL.

Examiner

Sang Y Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-9 and 14-29 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5,7 and 17-28 is/are rejected.
7) ☒ Claim(s) 8,9 and 29 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/27/04, 9/27/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 17-22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al (US 5,643,483) in view of Thimm et al (US 5,560,851), Hurko (US 3,883,719) or Matsumura et al (US 5,151,871).

Kubota shows a ceramic heater including a ceramic made of nitride ceramics with a lower surface having a roughness of 2 microns and with a heat conducting film or element having the thickness of 5 microns provided thereon. However, Kubota does not show that the thickness of the heating element is within ± 3 microns or less.

Thimm and Hurko show that it is well known in the art to provide a ceramic heater with a heating element having a uniform thickness to maintain a uniform heating across its heating surface. Matsumura also shows a ceramic heater having a heating element with a thickness between .5 to 2 microns.

In view of Thimm, Hurko or Matsumura et al, it would have been obvious to one of ordinary skill in the art to adapt Kubota with a heating element having a uniform thickness including the claimed range to maintain a uniform heating across its heating surface.

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Claim 17 is a product by process claim, and it is noted to the applicant that patentability of a product is not based on its method of making even though the product may have been made by a different process.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Thimm, Hurko or Matsumura as applied to claims 1-5, 17-22 and 28 above, and further in view of Fennimore et al (US 3,576,722) or DiGiacomo et al (US 5,442,239).

Kubota in view of Thimm, Hurko or Matsumura discloses the hot plate claimed except the resistance element made of a multilayer structure.

Fennimore shows a multilayer resistance pattern deposited on a ceramic substrate having a titanium layer being the first layer deposited thereon with additional layers such as copper and gold being deposited on the titanium layer. Fennimore teaches that the titanium layer serves as a good adhesion layer to the ceramic substrate. DiGiacomo also shows a multilayer structure with a titanium or chromium layer being the first layer deposited on the ceramic substrate. DiGiacomo teaches that such multilayer structure provides low stress, minimal corrosion and strong adhesion to the ceramic substrate.

In view of Fennimore or DiGiacomo, it would have been obvious to one of ordinary skill in the art to adapt Kubota, as modified by Thimm, Hurko or Matsumura, with a multilayer structure with titanium or chromium being the layer nearest to the ceramic substrate to provide a resistance layer that provides low stress and corrosion while providing strong bonding of the resistance layer to the ceramic substrate.

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4. Claims 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Thimm, Hurko or Matsumura as applied to claims 1-5, 17-22 and 28 above, and further in view of Morita et al (US 5,118,983) or Tsuruta et al (US 5,554,839).

Kubota in view of Thimm, Hurko or Matsumura discloses the hot plate claimed except the resistance element made of scaly noble metal powder.

Morita shows a hot plate made of nitride ceramic with a resistance element made of TiN, W as well as noble metals such as Pt with a glaze layer having the oxide and organic vehicle fused with the resistance element. Tsuruta shows a ceramic heater having a ceramic substrate with a metal paste having the scaly noble metal including a noble metal such as platinum, alumina and an organic vehicle.

In view of Morita or Tsuruta, it would have been obvious to one of ordinary skill in the art to adapt Kubota, as modified by Thimm, Hurko or Matsumura, with the heating element made of the scaly noble metals to provide a ceramic heater that is capable of withstanding a high thermal resistance and to further prevent cracks.

Allowable Subject Matter

5. Claims 8, 9 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Y. Paik

Sang Y Paik
Primary Examiner
Art Unit 3742

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